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SYNOPSIS OF NORTH AMERICAN SPECIES OF NUMMULARIA AND HYPOXYLON.

By J. B. ELLIS and BENJ. M. EVERHART.

[Continued from page 113, Vol. IV.]

Nummularia. Tul. Sel. Carp., II, p. 42. Stroma orbicular, cup-shaped or discoid, becoming black, marginate, the margin more or less distinctly sterile. Perithecia monostichous, peripheric, immersed. Asci cylindrical, 8-spored. Sporidia uniseriate, subelliptical, continuous, dark. The genus is too closely allied to Hypoxylon, especially the discoid forms.

A.—STROMA, CUP-SHAPED OR CONCAVE.

NUMMULARIA DISCRETA (SCHW.), Tul. Sel. Carp., II, p. 45 *Sphæria discreta*, Schw., Syn. N. Am., 1249. On dead branches and trunks of *Pirus Malus* and *Amelanchier Canadensis*, Newfield, N. J., on the first-named host, New England (Farlow), New York (Peck). On *Gleditschia triacanthos*, Ohio (Morgan), found also (Sacc. in Syll.) on *Sorbus*, *Ulmus*, *Cercis*, and *Magnolia*. Stroma erumpent, orbicular, 2–4^{mm}. diameter; cup-shaped, with a thick raised margin; dirty cinerous, then black, the concave surface at first white-punctate from the minute punctiform ostiola which in the mature state are scarcely visible. The wood beneath the stroma is marked with a black circumscribing line. Perithecia monostichous, ovate-cylindrical, nearly 1^{mm}. long, rather abruptly contracted above into a short neck, their rounded bases penetrating to the bottom of the stroma. Asci cylindrical, 110–120μ by 10–12μ. with long filiform paraphyses. Sporidia subglobose, nearly hyaline at first, finally opaque, 10–12 diameter. Sec. Cooke, Grev. XII, p. 6, the specimen of *Sphæria discincola*, Schw., in the Kew Herbarium, figured by Currey in Linn. Trans. 1858, Pl. 47, fig. 105, does not differ from *S. discreta*, Schw., but the *S. discincola* Schw. in Syn. Car. No. 63, and in Fr. S. M., p. 368, appears to be different, as may be inferred from the following description taken from Fries.

S. DISCINCOLA SCHW., Syn. Car. No. 63. Emersed-superficial, perithecia globose, crowded, black, truncate-annulate, covered with a cinereous white furfuraceous coat. Stroma irregular, subrotund, rugose, thin, penetrating deeply into the blackened wood. Perithecia scattered, rather large, urceolate, narrowed above into a minute round mouth, which is closed by white farinaceous matter. On the cut surface of trunks of apple trees in Carolina; rare.

NUMMULARIA REPANDA (FR.), *Sphæria repanda*, Fr. S. M., II. p. 346 *N. pezizoides*, E. & E., Bull. Torr. Bot. Club, XI, p. 74. On bark, Ottawa, Canada (Macoun.), on bark and wood, Topeka, Kans. (Cragin), and on bark of *Ulmus Americana*, Missouri (Demetrio). Found in Europe on branches and trunks of *Sorbus aucuparia*. Stroma erumpent-superficial, orbicular, or subelliptical, $\frac{1}{2}$–1^{cm}. diam., concave, and often with a thin, erect, rather broad margin, rufo-cinereus at first, finally black; disk mammillose from the projecting ostiola. Perithecia monostichous, immersed, ovate oblong $\frac{1}{2}$–$\frac{3}{4}\mu$, long, crowded, often subangular from mutual pressure. Asci cylindrical, subsessile, 8–spored, 110–120μ by 8μ, with long filiform paraphyses. Sporidia obliquely 1 seriate, narrow ovate, obtuse, subinequilateral, dark brown, 11–14μ by 4–5μ (15–16μ by 6–7μ, Sacc. in Syll.). Distinguished from *N. discreta* by its mammillose disk and differently shaped sporidia.

NUMMULARIA EXCAVATA,* (SCHW.), Syn. N. Am. 1250. On bark of different species of *Prunus*, Bethlehem, Pa. (Schweinitz). Rather rare. Elliptic-orbicular, 1–2^{cm}. across, surrounded and margined by the raised but not radiately fissured epidermis. Disk deeply concave, black, punctulate, with many minute scattered depressions, in the bottom of which are the ostiola. The stroma is included in a peculiar black cup-shaped receptacle, which penetrates to the wood, and is filled in the lower part with a woody pseudo-stroma (altered substance of the bark), the upper part being the true stroma, in which nestle the rather large pyriform scattered perithecia, occupying the central part and attenuated above into a black shining neck. Sporidia short elliptical, dark brown, 11.5–015.3 by 009.6–001.5μ. Allied to the preceding species, but more rare.

NUMMULARIA SUBCONCAVA, (SCHW.), *l. c.* 1251. On branches of *Viburnum dentatum*, Bethlehem, Pa. (Schweinitz). Gregarious and often confluent, erumpent $\frac{1}{4}$–$\frac{3}{4}^{\text{cm}}$ across, surrounded by the ruptured epidermis, and consisting of a black crustaceous shell, inclosing the few rather large globose-depressed perithecia, connected by a very scanty stroma. Disk subconcave, subrugose, and black. Ostiola globose-papillate, elevated, few, black, sometimes confluent, connected by a very short neck with the perithecia, which have the ascigerous nucleus white. Sporidia oblong, light yellowish-brown, 15.3–019.2 by 005.76–007.6μ, some of them slightly constricted in the middle but not septate.

B.—STROMA CONVEX.†

NUMMULARIA BULLIARDI, Tul. Sel. Carp. ii, p. 43. *Hypoxylon nummularia*, Bull. Champ. tab. 468, fig. 4. *Sphæria clypeus*, Schw. Stroma at first covered by the epidermis, soon emergent, almost superficial and free, convex, orbicular or oval, rarely of irregular shape, sometimes broadly effused, black inside and outside, punctulate from the slightly prominent ostiola, clothed at first with the rufo-ferrugineous conidial layer. Perithecia rather large, ovate, black, loosely included in closely packed cells in the stroma, something as in *Daldinia concentrica.* Asci cylindrical, briefly pedicellate, 100–115 by 10μ, with very long and stout paraphyses. Sporidia uniseriate, elliptical, hyaline at first, soon opaque, 12–15 by 7–9μ. The hymenium in this species, as in *Hypoxylon Petersii* B. & C., is at first covered by a carnose-coriaceous membrane, which soon disappears, except around the margin. Common on dead trunks and limbs of various deciduous trees around Newfield, N. J. Mostly confined to dead oak. Sec. Cooke in Grev. XII, p. 4, *Sphæria clypeus,* Schw. is different, but Schw., in his Syn. N. Am., gives *S. clypeus* as a syn. of *S. nummularia,* and there is nothing in his herbarium at Philadelphia to show that they are distinct.

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*We are indebted to our friend W. C. Stevenson, jr., who furnished the measurements of the sporidia in this and the next species, from an examination of the original specimens in the Schweinitzian Herbarium in the Academy of Natural Sciences in Philadelphia.

† Were we to rewrite this synopsis we would leave this section (B) of Nummularia in Hypoxylon, where it was formerly included, the difference being too slight to have any real generic value.

NUMMULARIA GLYCYRRHIZA, (B. & C.), *Hypoxylon glycyrrhiza,* B. & C. Exot. Fungi Schw., p. 285. Suborbicular, margin thin, center subpulvinate, and marked with papilliform points (ostiola), which are depressed in the center. Perithecia oblong. On bark, Surinam, South America. Stroma pulvinate, 25 by 12^{mm}. Differs from *N. Bulliardi,* to which it is closely allied, in its oblong closely packed perithecia. The foregoing is the description of this species given in Sacc. Sylloge. We have seen no authentic specimen of this but one sent from Ohio (Morgan No. 284), supposed to be this, was submitted for determination to Dr. Cooke, who was inclined to regard it as this species. In the Ohio specimen the perithecia are a little over one half millimeter long and are rather narrower than those of *N. Bulliardi.* The ostiola also are rather less prominent and are mostly slightly collapsed. The spordia are oblong, pale brown, 2-nucleate, 10–11 by 4–5μ.

NUMMULARIA OBULARIA, (FR.) *Hypoxylon obularium,* Fr. Nova Symb., p. 130. "Immersum, erumpens, demum late effusum, determinatum, impolitum, stromate proprio atro, peritheciis immersis oblongis, ostiolis hemispherico-prominulis umbilicatis. Ad truncos arborum mortuos in Costa Rica, Oersted." Closely allied to *N. Bulliardi,* Tul., but differs in having its stroma connate with the matrix and inseparable from it, at first subrotund, then concrescent in a continuous crust, generally elongated; and ostiola depressed. The specimens examined by Fries were old and no trace of asci or sporidia remained. Cooke in Grevillea places this species in the preceding section, but there is nothing in the description to show that the surface of the stroma is concave.

NUMMULARIA MICROPLACA, (B. & C.). *Diatrype microplaca,* B. & C. Journ. Linn. Soc. x, p. 386. On *Sassafras officinale.* South Carolina (Ravenel) and Ohio (Morgan 261 and Kellerman 279). On *Persea,* Darien, Ga. (Ravenel F. Am. 255), *Anthostoma microplacum* (*B. & C.*) Sacc. in Syll. Stroma much the same as in *N. hypophlæa,* orbicular $\frac{1}{2}$–1^{cm} across, or elongated 1–2 by $\frac{1}{2}$–1^{cm}, thin, crustaceo-carbonaceous, black originating beneath the epidermis but soon bare, surface even, faintly punctulate from the minute ostiola, which are not prominent but slightly depressed, as in *Hypoxylon punctulatum*, the opening at first filled with white farinaceous matter. Perithecia ovate-globose, small (less than one-half millimeter), monostichous. Asci (p. sp.) about 25 by 3μ, or with the short base 45–50μ long. Sporidia uniseriate, ends mostly slightly overlapping, sub-inequilaterally elliptical pale brown, 4½–5 by 2–2½μ. Berkeley says *N. hypophlœa* has larger ostiola and narrower sporidia. This is true as to, the ostiola, but as regards the sporidia the case is exactly the opposite. The wood beneath the stroma is stained with the same olive yellow color as the next species to which this is closely allied, but differs as stated.

NUMMULARIA HYPOPHLÆA, (B. & RAV.) Grev. IV, p. 95, *ibid.* XII, p. 7. *Anthostoma hypophlœum*, Sacc. On dead trunks of *Magnolia glauca*, Newfield, N. J. (Ellis), South Carolina (Ravenel). Stroma thin, suborbicular ½–1^{cm} across, slate color, originating beneath the cuticle, which is soon thrown off, slightly convex, and faintly papillose from the slightly projecting ostiola. Stains the subjacent wood yellowish or yellowish olive. Perithecia in a single layer, ovate-globose, small (one-half millimeter), abruptly contracted above into a slender neck piercing the superficial carbonaceous layer of the stroma. Asci slender (100 by 4μ) with a thread-like base (p. sp. 55–60μ long). Sporidia uniseriate, lying mostly end to end, narrow, elliptical, pale brown, 2 nucleate, about 7 by 2½–3μ.

NUMMULARIA RUMPENS, CKE. Grev. XII, p. 8. *Diatrype rumpens*, Cke. Ann. N. Y. Acad. Sci., I, p. 185. On bark, Galveston Bay, Texas (Ravenel). Orbicular or elliptical ½–1^{cm} in diameter or by confluence 2^{cm} or over, and then more or less irregular in shape, thin, black, surrounded by the ruptured epidermis, roughened by the slightly prominent ostiola. Perithecia monostichous, ovate, ¾ millimeter high. Asci cylindrical, 100–115 by 10μ. Sporidia uniseriate, hyaline, then opaque, elliptical, with ends sub-acute or rounded, 12–15 by 7–9μ. This description is drawn from the specimens in Rav. F. Am. This seems to differ from *N. Bulliardi* in its less prominent ostiola and rather more acutely pointed sporidia; nor are there in the specimens we have seen any very perceptible remains of the overlying membrane. In our collections are specimens of what appears to be the same as those in F. Am. from British Columbia and Louisiana, as well as several of the original Texas specimens from Dr. Ravenel.

NUMMULARIA EXUTANS, CKE. l. c. Broadly effused, black, sub-cuticular, soon erumpent, thin (about one-half millimeter) papillose from the slightly prominent ostiola. "Two or three inches long, with an irregular outline, thinner than *N. rumpens.*" Perithecia monostichous, depressed globose, less than one-half millimeter in diameter. In our specimen of this species from Dr. Ravenel, from his Texas collection, the asci had disappeared. The free sporidia were acutely elliptical or almond-shaped, rather variable in size, 10–15 by 6–8μ. Cooke says "ostiola depressed." In Ravenel's specimen they were as noted above; presenting the same appearance as those of *N. rumpens*, from which this appears to differ in its more broadly effused, thinner stroma and depressed globose perithecia.

NUMMULARIA SUBAPICULATA, E. & E. (n. s.). On bark. Topeka, Kan. Cragin 267. Subcuticular, erumpent 1–2^{cm} across, convex, 1^{mm} thick or a little more in the center, with the sterile margin thinner. Ostiola slightly papillose, prominent as in the two preceding species. Perithecia monostichous, oblong, about three-fourths millimeter high, closely packed and more or less laterally compressed. Asci cylindrical, 90–100μ (p. sp.), with a short stipitate base, and with long stout paraphyses, as in *N. Bulliardi*. Sporidia uniseriate, oblong-navicular or inequilaterally-elliptical, pale yellowish brown, 12–16 by 5–7μ, mostly with a single nucleus and a faint, bead-like apiculus at each end. This was reported to Professor Cragin as *N. Bulliardi* Tul. It differs from that species as noted.

THE GENUS SCLERODERMA IN SACCARDO'S SYLLOGE.

By J. B. ELLIS.

This genus in Vol. VII, Part I, of the Sylloge appears to be made up of heterogeneous materials, being made to include not only the species usually known as *Scleroderma*, with a thick, corky peridium, but also species with papery-membranaceous peridium, heretofore included in *Bovista* and *Mycenastrum*. Among the latter we find *Mycenastrum Oregonense*, E. & E. This species was already sufficiently unfortunate in being overburdened with names, a comparison with authentic specimens showing it to be the same as *Bovista pila* B. & C., and *B. tabacina*, Sacc. It now becomes *Scleroderma Oregonense* and *Lanopila? tabacina*! The specific name *pila* being the one first given must take precedence, and unless the genus *Bovista* is to be abandoned I see no good reason why the generic name given by B. &. C. should not also remain. The species in question is closely allied to *Bovista nigrescens*, Pers. So closely in fact that, regarding only its external characters it could not safely be separated from that species. Its internal characters, however, are slightly different.

The true *B. nigrescens* (Sec English and Italian spec.) differs in its rather larger (5μ) spores, which are also often very slightly muriculate-roughened and have a hyaline pedicel about equal in length to the diameter of the spore, while in *B. pila* the spores are generally a little paler, not distinctly pedicellate and quite smooth. In both the capillitium is about the same, forming loose balls (2^{mm} diam.) closely packed and filling the entire peridium with a firm elastic purplish-brown mass. When examined microscopically this capillitium is seen to be made up of numerous small knots or ganglia consisting of intricately entangled